SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the construction and working of triangular waveform generator using IC 741.

17. Draw the circuit diagram of Hartley oscillator and write its working principle.

18. Enter the following function on a Karnaugh map and solve it.

    (a) $F = ABC + A\,\overline{AB} + AB\overline{C}$

    (b) $F = \overline{A}B\,\overline{C} + \overline{A}\,BC + \overline{A}\,\overline{B}\,\overline{C}$

    (c) $F = A + \overline{A}C + B\overline{C}$.

19. Write a short note on the following

    (a) RS flip flop

    (b) Clocked SR flip flop and

    (c) D flip flop

20. Discuss the operation of R-2R ladder networks.

Shanmuga Industries Arts & Science College T.V.Malai

APRIL/MAY2025

FEL41 — ANALOG AND DIGITAL ELECTRONICS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define CMRR.

2. Draw the circuit diagram of an integrator.

3. State Barkhausen criteria.

4. What is multivibrator?

5. Convert the following binary numbers to decimal numbers.

    (a) 010011_2

    (b) 100101_2

6. Draw the logic circuit of NAND gate and write its logic truth table.

7. Define encoder.

8. What is register?

9. Define accuracy.

10. What is dual slope ADC?

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SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Construct an "Adder" Grant using OPAMP.

Or

(b) Describe the construction and working of square waveform generator using Op-amp.

12. (a) Draw the circuit diagram of wine bridge oscillator and explain its working.

Or

(b) Explain the working of monostable multivibrator.

13. (a) Convert the following decimal numbers into hexadecimal numbers.

(i) 2501

(ii) 3387

(iii) 1428

(iv) 547.

Or

(b) Draw the universal logic gates and write their truth table.

14. (a) Draw the circuit diagram of multiplexer and write its operation and truth table.

Or

(b) Discuss the construction and working of ring counter.

15. (a) Explain the digital to analog converter.

Or

(b) Discuss the successive approximation method of ADC.